

## ***Bridgeton Landfill, LLC***

November 17, 2015

Ms. Nicole Weidenbenner  
Air Pollution Control Program  
Missouri Department of Natural Resources  
P.O. Box 176  
Jefferson City, MO 65102

*RE: Completeness Notification concerning Bridgeton Landfill, LLC's Air Permit Application submitted September 21<sup>st</sup>, 2015*

Dear Ms. Weidenbenner:

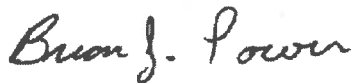
This document includes detailed responses to the questions included in your completeness notification e-mail sent to Bridgeton Landfill on October 22, 2015.

Please also note that Bridgeton Landfill intends to send responses to Dawn Froning's air dispersion modeling questions by the November 20<sup>th</sup>, 2015 date specified by Kendall Hale on the call involving the Missouri DNR, Bridgeton Landfill, and Trinity Consultants that took place on November 10<sup>th</sup>, 2015.

If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at (314) 744-8165.

Sincerely,

Bridgeton Landfill, LLC



Brian Power  
Environmental Manager  
Attachment

Please note that we have laid out the questions with our responses given in italics below each question individually.

Your application has been reviewed and determined to be incomplete. The following information is needed in order for your application to be deemed complete:

- In August 2013, St. Louis County Department of Health issued a permit to Bridgeton Landfill, LLC with the following project description:  
Bridgeton Landfill currently operates one 2,500 scfm John Zink candlestick open flare (permit 7736), one 3,500 scfm John Zink enclosed flare (permit 5924), and one 3,500 scfm Callidus enclosed flare (permit 7735). Bridgeton Landfill, LLC is proposing to replace the two existing 3,500 scfm enclosed flares with two 4,000 scfm John Zink candlestick open flares, as well as increase landfill gas flow rate of the existing 2500 scfm John Zink candlestick open flare (permit 7736) by 1000 scfm and install one additional 2500 scfm LFG Specialties candlestick open flare.

This permit was issued in accordance with 10 CSR 10-6.060(6). At that time, it was believed that the SO<sub>2</sub> emissions from the flares would be less than 250 tons per year. After installation of the flares, it was later determined through landfill gas sampling that the SO<sub>2</sub> emissions from the flares are in excess of 250 tons per year. This is substantiated in the permit application submitted on September 21, 2015. Thus, it is the opinion of the Air Pollution Control Program that the purpose of the September 21, 2015 application is to update the previous permit with more accurate numbers. In doing so, the permit should have underwent a Prevention of Significant Deterioration (PSD) review in accordance with 10 CSR 10-6.060(8). However, the permit application was submitted for a Non-attainment New Source Review for PM<sub>2.5</sub> under 10 CSR 10-6.060(7) and a minor source permit under 10 CSR 10-6.060(6) for all other pollutants.

The application states that the SO<sub>2</sub> emissions from the flares will exceed 250.0 tons per year and then proceeds to utilize an actual-to-projected-actual applicability test for SO<sub>2</sub> to determine that a PSD evaluation is not needed for SO<sub>2</sub>. The actual-to-projected-actual applicability test is for existing emission units. 52.21 defines new emission units as newly constructed and that has existed for less than 2 years from the date such emissions unit first operated. While the date of this application is two years since the original permit, the additional information regarding the SO<sub>2</sub> emissions was discovered well less than two years after the original permit. For new emission units, 52.21 states that an actual-to-potential test should be utilized. It goes on to state that the baseline actual emissions for new emission units shall equal zero.

Bridgeton Landfill, LLC needs to provide the following justifications:

- Why this permit application should not be considered a correction of the original permit and thereby reviewed under the PSD regulations found in 10 CSR 10-6.060(8).

***As indicated in AP-42 Section 2.4, "The rate of emissions from a landfill is governed by gas production and transport mechanisms. Production mechanisms involve the production of the emission constituent in its vapor phase through vaporization, biological decomposition, or chemical***

reaction.” Table 2.4-1 of this AP-42 Section includes default concentrations of speciated organic and inorganic compounds in landfill gas. AP-42 Section 2.4 clearly states that “These default concentrations have already been corrected for air infiltration and can be used as input parameters to Equation 3 ... for estimating speciated emissions from landfills when site-specific data are not available. The Section also states that “If site-specific data are not available, the data in Tables 2.4-1 through 2.4-3 can be used with the mass balance methods”. AP-42 Section 2.4 includes a “default” reduced sulfur compound concentration of 46.9 ppmv that can be utilized “if no site-specific data are available”. Even the draft updates to AP-42 Section 2.4 recommend a 47 ppmv default concentration for landfills with a majority of the waste in place before 1992 (and a lower value of 33 ppmv for a landfill [like Bridgeton Landfill] with a majority of waste in place after 1992). Emissions from a landfill (and the composition of LFG) are dependent upon various factors and are ultimately dictated by forces beyond the control of the landfill operator. As an industry, landfill operators are often times reliant upon USEPA provided data (or defaults) during permitting and emissions quantification efforts. Bridgeton Landfill has previously used accepted, default values for past permitting efforts to quantify SO<sub>2</sub> emissions from the landfill and no “correction” was or is necessary for this very standard permitting approach. In fact, the New Source Performance Standards (NSPS) for Municipal Solid Waste (MSW) Landfills (NSPS Subpart WWW) very clearly specify the use of AP-42 for estimating emission rates for comparison to the PSD major source thresholds.<sup>1</sup> Again, the use of AP-42 default concentrations for estimating SO<sub>2</sub> was an accurate and valid approach in 2013 and no “correction” is necessary (certainly not from the perspective that MDNR is proposing).

As MDNR is aware, a permit for the subject LFG control system (flare) changes was approved in August of 2013. Per MDNR’s previous statements, the permit and the applicable application was prepared based on the “best data we had at the time”. In fact, Bridgeton Landfill submitted the permit application in April of 2013 with SO<sub>2</sub> potential emissions based on two times the AP-42 default Total Reduced Sulfur (TRS) concentration. While the (2013) submitted application was very conservative with regard to SO<sub>2</sub> emissions (based on information available at the time), it is important for MDNR to understand that even if Bridgeton Landfill’s landfill gas contained Total Reduced Sulfur (TRS) levels (in 2013) consistent with recent sampling data/results, there would have been no reason to permit the landfill emission unit as a major Prevention of Significant Deterioration (PSD) source. As documented in Table D.3 of the application required to be submitted on September 21, 2015, landfill gas flow in 2012 (the full year prior to preparation of the subject flare permit) averaged 4,114.5 scfm. Using the average TRS concentration documented in Table D.2 of the (9/21/2015) application (1345 ppmv), the resulting SO<sub>2</sub> emissions from the LFG control system would be approximately 238 TPY (i.e., less than the PSD major source threshold of 250 TPY). Considering the fact that the Bridgeton Landfill has been closed since 2005, there would be no reason to believe (especially in 2013) that gas collection would increase at the site (yielding a higher potential to emit than 238 TPY of SO<sub>2</sub>) or that TRS concentrations would increase (following the cessation of waste acceptance). In either case, the post-2013 facility would have been minor for PSD purposes (and this permit “update” would be necessary).

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<sup>1</sup> 40 CFR 60.754(c) specifically references the estimation of NMOC emissions rates (using AP-42) for comparison to the PSD major source levels. However, this mention of the use of AP-42 for PSD purposes (within the NSPS regulations) clearly outlines the dependence on the use of AP-42 factors/methods for PSD/permitting purposes (for the waste industry). No mention of SO<sub>2</sub> is included in the NSPS regulations, as SO<sub>2</sub> is not a regulated pollutant within the MSW Landfill NSPS.

Besides the prior mentioned logic outlining the fact that the (pre-2013) existing landfill emission unit would never be a major source, it is important to note that landfills are a very unique source of air emissions and the permitting of such sources is not easily accommodated by the New Source Review framework and regulations. As previously mentioned, the permitting of a landfill can only be performed based on the best available information at a given time. Changes in waste acceptance rates, accepted waste types, annual rainfall, and waste composition (among many other variables) can have considerable impacts to gas generation and collection rates. Unfortunately, no one is able to accurately predict exactly when or if the impact to gas generation and collection will be witnessed (relative to the aforementioned variables). While other industries must permit based on raw material (or fuel) usage, operating hours, or other easy to dictate variables that impact potential emissions, such convenient options are not typically available to landfills and the waste industry. Therefore, landfills must initially permit based on available information and then update such permits (inconveniently as "modifications") when and if the variables used for determining potential emissions are updated. This practice is carried out quite regularly at landfills across the United States as (or if) maximum gas combustion/collection rates increase (beyond originally modeled) and landfill gas constituent concentrations increase. This regular practice is not viewed as a "correction" to previously approved permits, in fact no such terminology was utilized when Bridgeton Landfill permitted new/additional flares in August of 2013 (to accommodate an unexpected increase in gas generation). Simply put, this is how the waste industry must function under the provisions of New Source Review (i.e., we do not have the luxury of operating conventional emission units like boilers, engines, turbines, or coating lines). Flares (i.e., pollution control devices) have been permitted at Bridgeton Landfill, to control the landfill emission unit, for well over a decade.

Considering the long permitting history of flares at Bridgeton Landfill, it would be illogical to consider the September 21, 2015 application as a "correction" to the 2013 flare permit. The landfill emission unit at Bridgeton Landfill has utilized flares and has had associated SO<sub>2</sub> emissions for well over a decade. In addition to (and in summary of) the above mentioned justification (as to why the 9/21/2015 application was not a "correction"), please consider the following bullet items:

- There were no errors in the 2013 flare application and therefore there is nothing to correct. As indicated by the MDNR and consistent with EPA's AP-42 Section 2.4, the flares were permitted based on the best available information at the time. The MDNR processed and approved the April 2013 flare application, as there were no errors in the application.

- Landfills are dynamic sources, constantly changing based on a variety of factors. As has been documented countless times, constituents of landfill gas can dramatically change over the course of only several months. For example, many landfills have been forced to permit increased concentrations of hydrogen sulfide in landfill gas (and resulting SO<sub>2</sub> emissions from combustion sources). Surely these increases in SO<sub>2</sub> emissions are not processed as a "correction" to prior permit activities. It would not be appropriate for the MDNR to effectively attempt to retroactively apply NSR (or PSD) to the 2013 application when the permitting was consistent with regulation and accepted emission factors. Bridgeton Landfill should not be penalized or treated different than other landfills simply due to the fact that the TRS species being generated within the waste mass cannot effectively be removed from LFG.

- There very clearly was no effort on the part of Bridgeton Landfill to circumvent PSD regulations through the permitting effort in 2013. Again, all parties have agreed that the 2013 permitting was based on the best available information. Considering this admission, the September 2015 permit

**activity should not be considered a correction and should not be aggregated or combined with the 2013 application as a single project.**

**-The 2013 EIQ includes SO<sub>2</sub> actual emissions of over 50.0 TPY and the 2014 EIQ includes SO<sub>2</sub> actual emissions of over 30.0 TPY. These emissions are likely utilized by the State for emissions inventory purposes (on a State and Federal level). The permitting logic implied by MDNR suggests that the September 2015 application not only serves as a correction to the April 2013 application, but that there is effectively no existing potential to emit associated with the 2013 application (i.e., MDNR refers to the "flares" as a "new emission unit" with a baseline of zero tons). Considering the actual emissions (that have been paid for by Bridgeton Landfill and inventoried by the State of Missouri), the years of flare operation at the facility for the landfill emission unit, and the dynamic nature of landfills, clearly the September application is not a "correction", but merely a permit activity (and update) that has become the norm for the industry. As a side note, the flares (from an NSR perspective) are merely air pollution control devices that serve the landfill emission unit. Regardless of State-specific permitting terminology (or nomenclature), the flares are not "emissions units" from an NSR or PSD perspective.**

**-As indicated previously, the Bridgeton Landfill is a closed landfill that has not accepted waste since 2005. Increasing gas collection and increasing concentrations of gas constituents is never anticipated years after landfill closure. For these reasons and a variety of others, there is no long term benefit (from a health or environmental standpoint) to attempting to shoehorn the September 2015 application into PSD applicability. After considerable efforts to cap the landfill, expand the gas collection and control system, and maximize gas collection, Bridgeton Landfill is confident that gas flows and TRS levels will decrease at the facility. Concerns over major source thresholds will likely be no longer relevant within the near term. Furthermore, under the current NNSR applicable permit structure, the Lowest Achievable Emission Rate (LAER) for SO<sub>2</sub> emissions is already required. The control technology regime already contemplated by LAER is at least as stringent as the Best Available Control Technology (BACT) requirements that would be required through the non-applicable PSD regulations.**

**-Finally, the MDNR's March 25, 2015 letter to Bridgeton Landfill, LLC, requiring submittal of the 9/21/2015 application, clearly refers to the required submittal as a "modification of the construction permits" (for the flares). It would appear that MDNR did not contemplate the concepts of a "correction" to the existing flare permit or treatment of the flares as a "new emission unit" until Bridgeton Landfill demonstrated that PSD does not apply to the emission factor update within the 9/21/2015 application. Clearly, a modification (as initially contemplated by MDNR) could not be performed on a "new emission unit" (as subsequently altered by MDNR).**

- If Bridgeton Landfill, LLC continues to believe that this project should be considered a separate permitting project from the original permit issued in 2013, then justification should also be provided in accordance with 52.21(a)(2) Applicability procedures as to whether the application should be reviewed as a PSD.

**Bridgeton Landfill understands that the PSD requirements apply to the construction of any new major stationary source or any project (with a significant emissions increase and a significant net emissions increase) at an existing major stationary source in an area designated as attainment or unclassifiable. For the purposes of this discussion, a major stationary source is a stationary source**

**which emits, or has the potential to emit, 250 tons per year or more of a regulated NSR pollutant or any physical change that would occur at a stationary source not otherwise qualifying as a major stationary source if the changes would constitute a major stationary source by itself.**

**The approved August 2013 flare permit clearly documents, for the reasons discussed above, that the Bridgeton Landfill was not a major stationary source (for any pollutants) back in 2013. As mentioned above, there are no scenarios that would depict the landfill as a major stationary source in 2013 (or even retroactively). As such, there is no reason to contemplate the need for either an actual to projected actual applicability test or an actual to potential applicability test because these tests are applicable to determining if a modification is significant (i.e., a major modification).**

**In the case of Bridgeton Landfill, the permittee is instead tasked with demonstrating that the “physical change” at the facility would not qualify as a major stationary source in and of itself (i.e. a potential to emit over 250 TPY).<sup>2</sup> Bridgeton Landfill has established future actual emissions of 302 TPY utilizing pairings of recent gas flow data and TRS concentrations (and a very conservative 20% safety factor). The 9/21/2015 application outlines the logic utilized for calculating the 302 TPY future actual emissions at Bridgeton Landfill. The fact that Bridgeton Landfill appears to now have a potential to emit of greater than 250 TPY means that the facility would effectively stand as a major stationary source under PSD regulations. However, as MDNR is aware, just because a facility has a potential to emit of greater than 250 TPY does not mean that said facility would have ever gone through PSD permitting. Bridgeton Landfill also demonstrated within the 9/21/2015 application that the potential to emit for the 2013 flare application is less than 250 TPY (as expressed above), but above the potential to emit originally included in the application. Bridgeton conservatively (low) selected an “existing” flare potential to emit (termed as “past actuals” or a “baseline”) of 69.6 TPY within the 9/21/2015 application. The difference between this existing flare potential to emit and the new potential to emit (included in the 9/21/2015) serves as the measure for whether or not the “physical change” is, in fact, a major stationary source.**

**As outlined within the 9/21/2015 application, this permit activity is not considered a major stationary source and therefore has no PSD applicability.**

- Plant layout and process flow diagrams

**Flow Diagrams and the plant layout have all been attached to the end of this letter in Attachment A. Specifically, a flow diagram that shows the flow of Landfill Gas and Leachate from the landfill, a flow diagram for the leachate plant, a flow diagram for flare compound flow, and a detailed piping and instrumentation diagram of the leachate plant along with a full plant layout have been attached.**

- Documentation on the site specific testing data that is referenced in the emissions calculations. For example, Table D4 contains values for and references site specific landfill gas heating values, methane concentrations, and VOC concentrations, and Table 7 references sample test data on the amount of sulfur in the leachate tanks.

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<sup>2</sup> While the term “physical change” is utilized in this document, Bridgeton Landfill reminds the MDNR that there were no actions on the part of the facility that can be termed a “physical change or change in the method of operation” (relative to this permitting action). Bridgeton Landfill has submitted a permit application at the request of MDNR, and this permit update is caused by internal landfill mechanisms that are beyond the control of the facility.

*Within Table D.4, gas flow is based on the average of daily metered gas flow readings from January through April 2015 (5,026 scfm) that was adjusted relative to the Method 2 vs. flow meter ratio/factor, and includes a 20% safety factor (6,031 scfm). This flow rate is intended to be very conservative in nature and is well above the average flow recorded during the TRS sample events (i.e., 4,446 scfm). The methane concentration and heating value of the LFG within Table D.4 is 28% and 277.83 btu/scf, respectively. These values were included within the Title V Renewal application and they, again, were selected for conservatism (vs. current methane concentrations in the LFG). The VOC concentration in D.4 is taken from 5/15/2014 sampling data for the East Candlestick flare. This data has already been provided to the DNR as part of control device testing. The VOC concentration from the East Candlestick flare was selected as it is conservative (high) relative to other VOC data (e.g., blower inlet data from the same day). Additionally, both the flare and blower inlet data are from a blower inlet sampling port and for this reason are considered even more conservative.*

*The amount of sulfur in the leachate pre-treatment plant leachate is based on the 9/3/2015 mass balance letter from CEC to Bridgeton Landfill. The testing by CEC resulted in measurements that equate to a total of 99 TPY of elemental sulfur throughput through the leachate tanks, which is based on a plant flow of 300,000 gallons per day (leachate) and average sulfur concentration of 214.1 mg/l. An additional 40,000 gallons per day of water at 20 ppm Sulfur will contribute 1.218 tpy to the 97.8 tpy Sulfur from Leachate, resulting in the 99 TPY total listed in Table 7. The amount of that elemental sulfur that then volatilizes as sulfide is approximately 1.7%, which ultimately results in total sulfur dioxide emissions from the leachate pre-treatment plant of 3.38 TPY.*

- The emissions calculations do not account for the carbon monoxide present in the landfill gas itself. These emissions need to be included. If values are derived from site specific testing, then documentation also needs to be provided.

*As indicated in AP-42 Section 13.5, "in some waste gases, carbon monoxide (CO) is the major combustible component". The CO emission factors from AP-42 Table 13.5-2 are representative of flares burning a variety of vent gases. Bridgeton Landfill has no reason to believe that the CO levels in the landfill gas at the site will yield higher CO emissions than those in AP-42. Please keep in mind that, as stated above, CO is combustible.*

- Equations used in the emissions calculations require the temperature of the landfill gas. The default standard value of 25C was used in these calculations. Please provide the temperature of the landfill gas as measured at the Method 2 testing port.

*The temperature of the landfill gas as measured at the Method 2 testing port for the calculation time period is an average of 50 C. The use of 25 C represents a conservative estimate of gas temperature. The use of the actual average temperature would yield lower emissions. The default temperature was used for conservatism.*

- Various control efficiencies have been used for the flares and RTO devices. Documentation for the control efficiencies needs to be submitted in the application.

*The various control efficiencies used in the application are all based on AP-42 Section 2.4 Table 2.4-3. For the most part, all NMOC/VOC calculations utilized the "Typical" 99.2%. To be conservative, all Flare HAP emissions utilized the "Halogenated Species" typical control efficiency of 98%. The initial*

*performance test for each of the flares (utilizing the methods within 40 CFR 60.18) aids in confirmation and acceptance of the 98% destruction efficiency value for these devices. Please note that the RTO destruction efficiency of 98% (which was included but not utilized within the 9/21/2015 application) is documented within the July 11, 2014 permit application. This is a standard (minimum) control efficiency for an oxidizer, it is justified within previous applications, and the value is applied to previous WATER9 emission calculations for applicable leachate tanks. The 9/21/2015 is not intended to supersede the July 11, 2014 application for any source specific data or emissions data (with the exception of SO<sub>2</sub>).*

- Tables D12 and D13 refer to emission units EP-I01 through EP-I08. These units are not described elsewhere in the application. Construction permit forms need to be submitted for these units.

*Tables D12 and D13 have the following emissions units listed in the application.*

*EP-I01 & EP-I02: Two portable diesel pumps, each with a 28.1 kW diesel engine*

*EP-I03 & EP-I04: Two portable light plants, each with a 17.5 kW diesel engine*

*EP-I05 & EP-I06: Two portable baker pumps, each with a 104 kW diesel engine*

*EP-I07 & EP-I08: Two portable air compressors, each with a 224 kW diesel engine*

*These emission units were listed as insignificant activity units in the Title V permit application that was submitted last year. These emission units were used in the application to determine the facility wide PTE. The emissions from these units were based on a run time of 2,080 hours of operation. Also, the hourly emissions limits (per unit basis) satisfy the insignificant emission levels listed in 10 CSR 10-6.061(3)(A)3.A and no HAP emissions are greater than 0.5 lb/hr, satisfying the exemption status listed in 10 CSR 10-6.061(3)(A)3.B. These emission units were exempt from construction permitting and therefore no forms were attached.*

- The construction permit application forms are not complete. The information requested in sections "Point Identification" and "Stack/Vent Parameter" need to be complete for all equipment. Also please clarify how the flow rate and annual throughput of LFG was calculated for the individual flares.

*The construction permit application forms have been updated to include the missing data in the "Point Identification" and "Stack/Vent Parameter" sections. The flow rate and annual throughput of Landfill Gas was based on the Method 2 data taken during TRS sampling events. Per Table D.2, the average flow was 4,446 scfm for the entire facility. This yields an annual throughput of 2,337 MMSCF/yr at 8,760 hours per year. In an effort to maintain operational flexibility, there is no need to designate portions of the total flow to individual flares, but this should not indicate that any of the flares receive that amount of landfill gas at any given time.*

*Also, the enclosed flare has been entirely removed from the construction application. Although the enclosed flare was originally permitted in 2013, it was never installed and is now in the process of being formally decommissioned.*

- Comments/questions provided by Dawn Frowning to Mike Liebert in an e-mail dated October 20, 2015 entitled, "Comments on the Ambient Air Quality Impact Analysis for Bridgeton Landfill, LLC".



***As discussed in the cover letter, this information will be submitted by 11/20/2015.***

## **ATTACHMENT A: FLOW DIAGRAMS, PLANT LAYOUT, AND FORMS**

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